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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/777,394	02/12/2004	John P. Nohl	60,130-2034/04ARM0127	5771

26096 7590 04/27/2007  
CARLSON, GASKEY & OLDS, P.C.  
400 WEST MAPLE ROAD  
SUITE 350  
BIRMINGHAM, MI 48009

EXAMINER
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LUKS, JEREMY AUSTIN

ART UNIT	PAPER NUMBER
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2837

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/27/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	Application No. 10/777,394	Applicant(s) NOHL ET AL.	
	Examiner Jeremy Luks	Art Unit 2837	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 February 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 and 11-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 11-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-3, 5-6, 9, 11-12, 14-17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rutschmann (5,582,004) in view of Peube (5,655,367) and Lawrence (5,388,408). Rutschmann teaches a power train control system (Figure 1) comprising: an engine (Figure 1, #1) including multiple cylinders (2, 4); a controller (6) selectively activating multiple cylinders (2, 4) to provide a desired power displacement (Col. 1, Lines 8-16); and an exhaust system having an exhaust passage (9); a valve (15) and an electrical actuator (Col. 3, Lines 50-51); wherein the valve (15) is supported by said housing and arranged in said exhaust passage and selectively electrically actuated by said controller (6) to move said valve between multiple positions in response to said desired power displacement (Col. 3, Line 57-Col. 9, Line 39).

Rutschmann fails to teach wherein substantially all of said exhaust gas flowing through said valve in each of said multiple positions for tuning said exhaust muffler, said valve increasing a backpressure within said exhaust passage by increasingly blocking said exhaust passage with said valve; an electrical actuator supported by said housing, wherein said housing includes a main housing portion and an actuator mounting pipe extending exteriorly away from said main housing portion, and an inlet pipe extending

exteriorly away from said main housing portion proximate and generally parallel to said actuator mounting pipe; wherein said exhaust passage includes a valve body supporting said valve with a shaft extending into said valve body and said valve secured to said shaft, said electrical actuator rotating said shaft to move said valve between said multiple positions; said electrical actuator actuating said valve between said multiple positions; and a rod is arranged transverse to said shaft; a position sensor detecting said multiple positions of said valve, said position sensor communicating to said controller, and wherein said controller determines a malfunction condition based upon information from said position sensor; wherein said exhaust passage is in fluid communication with a tuning chamber and said tuning chamber is in fluid communication with an outlet pipe carrying exhaust gas from a main housing portion. Lawrence teaches an exhaust muffler (Figure 3) comprising a housing (Figure 16, #100); a valve (40) supported by said housing (100) and arranged in said exhaust passage (104) movable between multiple positions for tuning said exhaust muffler (Col. 8, Line 60-Col. 9 Line 3); and an electrical actuator (114) supported by said housing (100), said electrical actuator (114) actuating said valve (40) between said multiple positions; wherein said housing (Figure 26, #150) includes a main housing portion (160) and an actuator mounting pipe (80', 162) extending exteriorly away from said main housing portion (160), and an inlet pipe (156) extending exteriorly away from said main housing portion (160) proximate and generally parallel to said actuator mounting pipe (80', 162) an exhaust passage (Figure 16, #104) includes a valve body (102) supporting said valve (40) with a shaft (108) extending into said valve body (102) and said valve (40) secured to said shaft (108), said electrical actuator (114) rotating said shaft (108) to

move said valve (40) between said multiple positions; and a rod (Examiner is referring to the shaft portion secured between gear #112 and electrical actuating motor #114) is arranged transverse to said shaft (108), and said electrical actuator (114) moving said rod generally linearly to rotate said shaft (108); and wherein said exhaust passage (104) is in fluid communication with a tuning chamber (26) and said tuning chamber (26) is in fluid communication with an outlet pipe (30) carrying exhaust gas from a main housing portion. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the apparatus of Rutschmann, with the apparatus of Lawrence to provide a valve means connected to the exhaust pipe for adjusting the sound produced by the system by controlling the flow of exhaust gas from the exhaust pipe to a sound attenuation chamber and exhaust outlet. Peube teaches wherein an exhaust gas flows (Figure 1, #7) through said exhaust passage (1), with substantially all of said exhaust gas (7) flowing through a valve (3) in each of multiple positions (Col. 4, Lines 41-43), said valve increasing a backpressure within said exhaust passage (1) by increasingly blocking said exhaust passage (1) with said valve (3); a position sensor (17b) detecting said multiple positions of said valve (14) (Col. 5, Lines 5-15), said position sensor (17b) communicating to said controller (16), wherein said controller (16) determines a malfunction condition based upon information from said position sensor (17b) (Col. 3, Line 66-Col.4, Line 3). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the apparatus of Rutschmann as modified, with the apparatus of Peube to variably restrict the cross-section of the exhaust passage, which instantaneously varies the energy loss of the gases flowing in the pipe as a function of the quantity measured by the sensor, in order to principally reduce the low-frequency

pulsations of the gases and low-frequency components of the noise which results from its very presence in the exhaust pipe.

2. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rutschmann (5,582,004) in view of Peube (5,655,367) and Lawrence (5,388,408) as applied to Claim 3 above, and further in view of Matsumoto (JP 2003161149 A). Rutschmann, Peube and Lawrence are relied upon for the reasons and disclosures set forth above. Rutschmann, Peube and Lawrence fail to teach at least one heat shield is arranged between said electrical actuator and said inlet pipe. Matsumoto teaches a heat shield (Figure 4, #72) outside of an inlet pipe (66), and when used in combination, between an inlet pipe and electrical actuator. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the apparatus of Rutschmann as modified, with the apparatus of Matsumoto in order protect the electrical actuator from damage due to the heat produced within the exhaust housing.

3. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rutschmann (5,582,004) in view of Peube (5,655,367) and Tadokoro (4,926,636). Rutschmann teaches a power train control system (figure 1) comprising: an engine (Figure 1, #1) including multiple cylinders (2, 4); a controller (6) selectively activating multiple cylinders (2, 4) to provide a desired power displacement (Col. 1, Lines 8-16); and an exhaust system having an exhaust passage (9); a valve (15) and an electrical actuator (Col. 3, Lines 50-51); wherein the valve (15) is supported by said housing and arranged in said exhaust passage and selectively electrically actuated by said controller (6) to move said valve between multiple positions in response to said desired power displacement (Col. 3, Line 57-Col. 9, Line 39). Rutschmann fails to teach a valve

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movable between multiple positions for tuning said exhaust muffler; wherein substantially all of said exhaust gas flows through said valve in each of said multiple positions, said valve increasing a backpressure within said exhaust passage by increasingly blocking said exhaust passage with said valve; an exhaust passage including a valve body supporting said valve with a shaft extending into said valve body and said valve secured to said shaft, said electrical actuator rotating said shaft to move said valve between said multiple positions; and a rod is arranged transverse to said shaft, and said electrical actuator moving said rod generally linearly to rotate said shaft. Peube teaches wherein an exhaust gas flows (Figure 1, #7) through said exhaust passage (1), with substantially all of said exhaust gas (7) flowing through a valve (3) in each of multiple positions (Col. 4, Lines 41-43), said valve increasing a backpressure within said exhaust passage (1) by increasingly blocking said exhaust passage (1) with said valve (3). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the apparatus of Rutschmann, with the apparatus of Peube to variably restrict the cross-section of the exhaust passage, which instantaneously varies the energy loss of the gases flowing in the pipe as a function of the quantity measured by the sensor, in order to principally reduce the low-frequency pulsations of the gases and low-frequency components of the noise which results from its very presence in the exhaust pipe. Tadokoro teaches an exhaust muffler (Figure 28, #11A) including a housing (See Figure 29) having an exhaust passage (115A); a valve (117A) supported by said housing (See Figure 29) and arranged in said exhaust passage (115A) movable between multiple positions for tuning said exhaust muffler (111A); the exhaust passage (115A) including a valve body (Figure 29) supporting said valve

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(117A) with a shaft (118) extending into said valve body (Figure 29) and said valve (117A) secured to said shaft (118), an actuator (120A) rotating said shaft (118) to move said valve (117A) between said multiple positions; and a rod (120a) is arranged transverse to said shaft (118), and said actuator (120A) moving said rod (120a) generally linearly to rotate said shaft (118). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the apparatus of Rutschmann as modified, with the apparatus of Tadokoro to reduce or prevent torque shock that may be caused upon actuating or switching the valve, while controlling the change in torque generated by the engine.

4. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rutschmann (5,582,004) in view of Peube (5,655,367) and Tadokoro (4,926,636) as applied to Claim 6 above, and further in view of Yashiro (5,739,483). Rutschmann, Peube and Tadokoro are relied upon for the reasons and disclosures set forth above. Rutschmann, Peube and Tadokoro fail to teach wherein said housing includes a stop limiting travel of at least one of said rod and said shaft. Yashiro teaches a housing (Figure 2, #1) including a stop (19) limiting travel of a shaft (15). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the apparatus of Rutschmann as modified, with the apparatus of Yashiro to better support the shaft and rod, increasing the durability of the valve mechanism.

5. Claims 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rutschmann (5,582,004) in view of Peube (5,655,367) and Lawrence (5,388,408) as applied to Claim 5 above, and further in view of Yashiro (5,739,483). Rutschmann, Peube and Lawrence are relied upon for the reasons and disclosures set forth above.



Rutschmann, Peube and Lawrence fail to teach wherein; said housing includes an actuator mounting pipe extending into a main housing portion, and a first bearing arranged on said actuator mounting pipe supports one end of said shaft and a second bearing arranged on said valve body supports another end of said shaft. Yashiro teaches wherein a housing (1) includes an actuator mounting pipe (Figure 1, #8) extending into a main housing portion (2), and a first bearing (Figure 2, #18) arranged on said actuator mounting pipe (8) supports one end of said shaft (15) and a second bearing (18) arranged on said valve body supports another end of said shaft (15). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the apparatus of Rutschmann as modified, with the apparatus of Yashiro to better support the shaft and rod, increasing the durability of the valve mechanism.

6. Claims 13 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rutschmann (5,582,004) in view of Peube (5,655,367) and Lawrence (5,388,408) as applied to Claims 1 and 14 above, and further in view of Tadokoro (4,926,636).

Rutschmann, Peube and Lawrence are relied upon for the reasons and disclosures set forth above. Rutschmann further teaches a powered electrical actuator. Rutschmann, Peube and Lawrence fail to teach a return spring biasing a valve to one of a multiple positions in the event of power loss of the electrical actuator. Tadokoro teaches teach a return spring biasing (Figure 1, #26b) a valve (25) to one of a multiple positions (Col. 6, Lines 5-22), and would be capable of doing so in the event of power loss of the electrical actuator described by Rutchmann when used in combination. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the

apparatus of Rutschmann as modified, with the apparatus of Tadokoro to return the valve to an open state in the event of a malfunction.

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rutschmann (5,582,004) in view of Peube (5,655,367) and Lawrence (5,388,408) as applied to Claim 5 above, and further in view of Douglas (5,290,974). Rutschmann, Peube and Lawrence are relied upon for the reasons and disclosures set forth above. Rutschmann, Peube and Lawrence fail to teach wherein said housing includes a main housing portion having at least one baffle supporting an outer shell with at least one of said at least one baffle and said valve body including locating features providing a desired orientation between said at least one baffle and said valve body. Douglas teaches a housing (Figure 4) including a main housing portion having at least one baffle (46) supporting an outer shell (44) with at least one of said at least one baffle (46) and said valve body (62) including locating features (50, 66) providing a desired orientation between said at least one baffle (46) and said valve body (62). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the apparatus of Rutschmann as modified, with the apparatus of Douglas to provide a tab and notch alignment apparatus for an exhaust system which does not require the additional cost of aligning and welding steps during production.

### ***Response to Arguments***

8. Applicant's arguments with respect to claims 1-9 and 11-19 have been considered but are moot in view of the new ground(s) of rejection. The Examiner has clarified the issues Applicant referred to as "incoherent arguments." The Examiner also

notes that there is no requirement to provide a rejection of each claim individually. The Examiner has coherently rejected each of the pending claims. Claims rejected by the same combination of references have been grouped together for convenience, and in many cases with the independent and dependent claims, elements from one or more references were combined to coherently reject said claims.

### ***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Pertinent arts of record relating to electrically controlled in-muffler valves for use during cylinder deactivation are disclosed in the PTO-892.

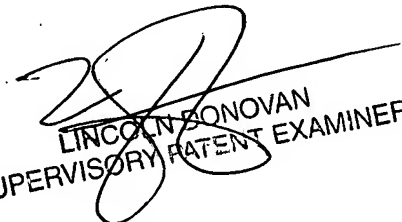
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremy Luks whose telephone number is (571) 272-2707. The examiner can normally be reached on Monday-Thursday 8:30-6:00, and alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lincoln Donovan can be reached on (571) 272-1988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jeremy Luks  
Patent Examiner  
Art Unit 2837  
Class 181

  
LINCOLN BONO VAN  
SUPERVISORY PATENT EXAMINER